

# PATENT ABSTRACTS OF JAPAN

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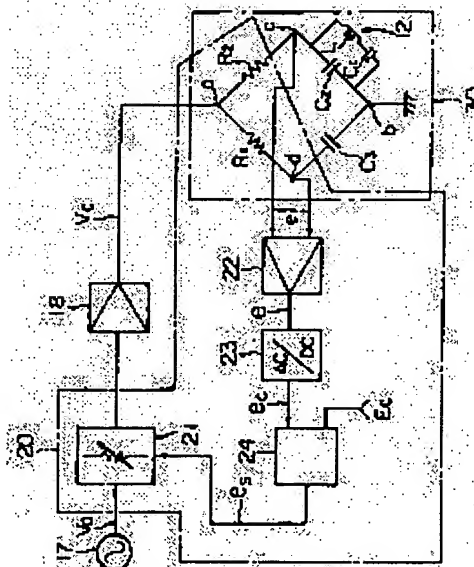
**(54) GAS RATE SENSOR**

(57)Abstract:

**PURPOSE:** To hold a constant vibrating property of a piezoelectric pump, to keep a constant gas rate, and to enable to perform a reliable detection of an angular velocity, by controlling a drive voltage of a piezo-vibrating plate corresponding to a change in a dynamic impedance.

**CONSTITUTION:** An output of an oscillator 17 is applied as a piezoelectric pump drive signal to a bridge circuit 30 for detecting a dynamic impedance via a dynamic impedance circuit 20 to drive a piezo-vibrating plate 12.

If the dynamic impedance of the plate 12 changes, an unbalanced voltage (e) between connecting contacts (c) and (d) of the circuit 20 is generated corresponding to the change. After the voltage (e) is converted 23 into a DC voltage  $e_c$ , a difference in a voltage between the voltage  $e_c$  and a reference voltage  $E_c$  is produced, and is applied as a control signal  $e_s$  to an electronic attenuator 21. This causes controlling of the drive signal of the plate 12 so that the signal  $e_s$  is brought to zero, allows the amplitude of the plate 12 to be kept in a constant manner, enables the amplitude of the piezoelectric pump to be held constant, and causes bringing of a gas current rate of gas, jetted from a gas chamber, into a constant manner.



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